REMARKS

The Office Action dated November 19, 2007 has been carefully reviewed and the claims amended as described below.

Claim Rejections – 35 U.S.C. § 102

The Examiner rejected claims 1-7, 13-27, 31, and 33-46 under 35 U.S.C. §102(b) as being anticipated by Lin (U.S. 6,068,597).

Dynamic Elastography Versus Quasi-Static Elastography

Lin discloses a method and apparatus for "vibrational resonance" ultrasonic Doppler spectrometry. In this technique, tissue is excited into a vibrational resonance which is measured by Doppler frequency shift of ultrasound reflected by the moving tissue. A Doppler frequency shift will not occur with static tissue.

Lin is thus a form of "dynamic elastography" described at paragraph [0005] of the published specification. In contrast, the present invention describes "quasi-static" elastography in which tissue is measured under steady-state compression. See generally paragraph [0004] of the published specification.

Claims 1 and 21 have been amended to indicate that the echo signals are acquired with the tissue "substantially at rest" and thus to reflect this fundamental difference.

Further, claims 1 and 21 have been amended to indicate that the strain measurement is made by comparing displacement between the echo signals. This measurement is generally a phase shift determination described generally with respect to Fig. 4 of the present application. In contrast, Lin employs a frequency shift measurement that is readily distinguished from the phase shift measurements made in the present invention.

Angular Compounding of Elasticity Versus Phased Array Acquisition

As noted in the previous response, Lin does combine ultrasonic measurements taken at different angles as part of a phased array acquisition. The present invention also contemplates such a phased array acquisition (see, for example, paragraph [0033] of the published specification) but this is distinct from the combination of ultrasonic signals at different angles to measure elasticity proposed by the present invention.

Generally, a phased array transducer combines ultrasound signals at different angles with different effective phase shifts so as to cause constructive and destructive interference between the signals resulting in a focused measurement along a single axis. This operation of a phased array transducer may be readily distinguished from the combination of signals in the present invention, as now claimed in claims 1 and 21, which determines a "strain measurement" based on the "relative displacement in time of the portion of the echo signal". The compounding of Lin in a phased array transducer does not result in a strain measurement nor does it evaluate displacement in time of portions of the echo signal to produce a strain measurement.

New claims 47 and 48 add the claim limitation of using a phased array transducer, in addition to the angular compounding, to further make this distinction between the phased array compounding of Lin and that the present invention.

The differences between Lin and the present invention, as now defined by the amended claims, reflect fundamentally different acquisition techniques. For this reason, a person of ordinary skill in the art reading Lin would not be led to the knowledge that small angular differences in quasi-static elastography are sufficient to provide the necessary statistical independence to reduce noise when the quasi-static elastography signals are combined. See generally paragraph [0010] of the present invention.

Accordingly, it is believed that a person of ordinary skill in the art would not be led to modify Lin to produce the present invention without further teachings not present in the prior art.

In light of these remarks and amendments, it is believed that claims 1, 5-21, 25-48 are in condition for allowance and allowance is respectfully requested.

Respectfully submitted,

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